WHAT IS CLAIMED IS:

1. A gerotor and bearing apparatus for a downhole whirling mass orbital vibrator generating vibration in a borehole, which apparatus comprises:

a gerotor with an inner gear rotated by a shaft having one less lobe than an outer gear;

a whirling mass attached to said shaft;

at least one bearing attached to said shaft engaging at least one sleeve; and

means to rotate said inner gear, said mass, and said bearing in a selected rotational direction to cause said mass, said inner gear and said bearing to backwards whirl in an opposite rotational direction.

2. A gerotor and bearing apparatus as set forth in Claim 1 wherein said bearing is a track roller bearing.

3. A gerotor and bearing apparatus as set forth in Claim 1 including a pair of bearings attached to said shaft engaging a pair of sleeves.

4. A gerotor and bearing apparatus as set forth in Claim 3 wherein said pair of bearings and said pair of sleeves are replaceable.

5. A gerotor and bearing apparatus as set forth in Claim 3 wherein said bearings are on opposite ends of said whirling mass.

6. A gerotor and bearing apparatus as set forth in Claim 1 wherein said means to rotate said inner gear, said mass, and said bearing in a selected rotational direction includes a drive shaft with a plurality of U-joints.

7. A gerotor and bearing apparatus as set forth in Claim 1 including a fluid pump powered by said shaft providing a self-contained drip lubrication system.

8. A gerotor and bearing apparatus as set forth in Claim 7 including a pair of U-joint assemblies.

9. A gerotor and bearing apparatus as set forth in Claim 1 including a pair of said gerotors spaced from each other and coaxially aligned.

10. A gerotor and bearing apparatus as set forth in Claim 1 wherein said backwards whirling mass is an elongated cylinder.

11. A gerotor and bearing apparatus as set forth in Claim 1 wherein said backwards whirling mass produces vibration energy which is used in enhanced fluid recovery.

12. A gerotor and bearing apparatus as set forth in Claim 1 wherein said backwards whirling mass produces vibration energy which is used as a seismic source.

13. A gerotor and bearing apparatus as set forth in Claim 1 wherein said backwards whirling mass is an elongated cylindrical configuration with a diameter less than said housing.

14. A gerotor and bearing apparatus as set forth in Claim 1 wherein said inner gear backwards whirl at a speed defined by a factor

$$K = \frac{n}{N-n}$$

where n = number of lobes on inner rotor and
N = number of lobes on outer rotor

15. A method to generate vibrational energy in a borehole, which method comprises:

rotating an inner gear of a gerotor by a shaft in a selected rotational direction wherein said inner gear has one less lobe than an outer gear;

rotating a whirling mass in a selected rotational direction by rotation of said shaft so that said mass and said inner gear backwards whirl in a direction opposite to said selected rotational direction; and

transmitting centrifugal force created by said whirling mass from at least one bearing to at least one cylindrical sleeve by contacting said sleeve.

16. A method to generate vibrational energy in a borehole as set forth in Claim 15 including transmitting said centrifugal force to a downhole casing.

17. A method to generate vibrational energy in a borehole as set forth in Claim 15 wherein said centrifugal force generates vibrational energy.

18. A method to generate vibrational energy in a borehole as set forth in Claim 15 including contacting a sleeve with at least one bearing rotated by said shaft.

19. A method to generate vibrational energy in a borehole as set forth in Claim 15 including transmitting said centrifugal force from said sleeve to slips and to a casing.

20. A gerotor and bearing apparatus for a downhole whirling mass orbital vibrator generating vibration in a borehole, which apparatus comprises:

a pair of gerotors spaced from each other, each gerotor with an inner gear rotated by a shaft having one less lobe than an outer gear;

a whirling mass attached to said shaft;

a pair of bearings attached to said shaft on opposite ends of said whirling mass;

means to rotate said inner gears, said mass, and said bearings in a selected rotational direction to cause said gears, said mass, and said bearings to backwards whirl in an opposite rotational direction; and

means to maintain angular radial position and angular alignment between said ends of said rotating mass.